Rhode Island Flood Plain Management Services

BENCH & REFERENCE MARK CATALOGUE PORTSMOUTH, NEWPORT AND WARWICK, RHODE ISLAND

August 1994



US Army Corps of Engineers New England Division

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BENCH AND REFERENCE MARK CATALOGUE FOR THE COMMUNITIES OF PORTSMOUTH, NEWPORT, AND WARWICK

PREPARED FOR:

STATE OF RHODE ISLAND
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DIVISION OF PLANNING
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WALTHAM, MA 02254

AUGUST 1994

BENCH AND REFERENCE MARK CATALOGUE FOR THE COMMUNITIES OF PORTSMOUTH, NEWPORT, AND WARWICK

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BENCH AND REFERENCE MARK CATALOGUE FOR THE COMMUNITIES OF PORTSMOUTH, NEWPORT, AND WARWICK, RHODE ISLAND

STUDY PURPOSE AND SCOPE

This study developed a catalogue of bench and reference marks for several communities in Rhode Island. The catalogue will enable communities to better monitor and enforce the base flood elevation (100-year frequency) requirements contained in the National Flood Insurance Program (NFIP). Where additional marks were found to be necessary, new bench marks were established as part of this effort.

This work was conducted by the U.S. Army Corps of Engineers, New England Division, for the State of Rhode Island's Department of Administration, Division of Planning, under the Corps' Flood Plain Management Services (FPMS) Program. The FPMS program is authorized under Section 206 of the Flood Control Act of 1960 (PL 86-645).

The scope of work included:

- Identifying those communities, through coordination with the NFIP State Coordinator, that needed a bench mark inventory.
- Conducting a records search of all existing bench and reference mark information.
- Field checking this information to determine if the marks still existed.
- Establishing new marks in areas lacking coverage.

METHODOLOGY

Initial coordination with the State's National Flood Insurance Program (NFIP) coordinator revealed that there were five communities in Rhode Island where a catalogue of bench and reference marks would be useful. Those communities in order of priority were: Westerly, Charlestown, Portsmouth, Newport, and Warwick. A catalogue for Westerly and Charlestown was developed previously and is contained in a report published by the Corps dated November 1993.

The first step in the cataloguing effort was to research all existing bench and reference mark information in or near the floodplains of each community. The first source considered, the

Flood Insurance Studies (FIS), listed many reference marks. Other sources included: the Rhode Island Department of Transportation (DOT), the Rhode Island Office of Statewide Planning, and each community's department of public works and/or engineering office. Once the information was gathered, all relevant marks were displayed on a map that also depicted the floodplain. This information was then field checked to verify whether or not the marks still existed. Those marks that were found to no longer exist were removed from further consideration.

A meeting was then held with the NFIP State Coordinator to discuss the inventory, locate where gaps existed, and identify where to install additional marks. The NFIP State Coordinator chose to establish new marks in areas where there was a definite need, in areas where traditionally there were flooding problems or areas of recent development. This resulted in establishing eight new bench marks: two in Portsmouth, three in Newport, and three in Warwick. The newly established marks were surveyed by the Corps of Engineers, New England Division. The marks were established in permanent structures, such as walls, bridge abutments, and granite curbing. Marks established on granite curbing consisted of chiseled squares at least 0.25-inch deep. One area in Portsmouth did not contain any permanent structures on which to place the mark and therefore the mark is a railroad spike set in a utility pole. Several reference marks are located around each Corps established bench mark which can also be retrieved for future use.

STUDY RESULTS

The following catalogue lists the bench and reference marks for the towns of Portsmouth, Newport, and Warwick. Those elevation bench marks installed by the Corps of Engineers are included and designated as such. They were established using existing bench and reference mark elevations identified in the records search phases of this study. Due to the limited funding of the study, existing reference mark elevations could not be verified. Therefore, there may be some carry over of error in establishment of some of the new marks. The NFIP State Coordinator is aware of this and is satisfied that the accuracy of the elevations is sufficient for the purpose intended.

All relevant marks are shown on Figures 1, 2, and 3. Those marks established by the Corps of Engineers are shown in red. Additional information on marks established by the Corps of Engineers is shown in the attached Appendix.

CONCLUSION

This study attempted to provide a catalogue of all existing bench and reference marks within or adjacent to the floodplains of certain Rhode Island communities. Research of several different sources followed by verification of existing marks were done to ensure the quality of the catalogue information. Where gaps were found to exist in areas of historic flood damage or new development, new marks were installed. Eight such elevation marks were installed by Corps of Engineers personnel. The following tables and figures show the results of the cataloguing effort.

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DESIGNATION	ELEVATION (FEET NGVD)	DESCRIPTION
BM 1	11.23	A Corps of Engineers mark established 5/94. It is a chiseled "X" in the rim of a water valve cover near the intersections of Mansfield Avenue, Lakeville Avenue, and Anthony Road. The mark is on Mansfield Avenue across from utility pole #17.
RM-1	16.40	A chiseled square on the southeast corner of the gas pump island on the northwest side of the maintenance garage at the golf course. The golf course entrance is about 0.8 miles west along Anthony Road from the Sakonnet River Bridge (Rte 24).
V27	26.02	A standard USC&GS disk, stamped "V 27 1969", set on the top of the west end of the north concrete bannister of the highway overpass over Anthony Road. The overpass is about 0.2 miles west of the Sakonnet River Bridge.
U27	39.32	A standard USC&GS disk, stamped "U 27 1969", set on the top of the south end of the west concrete abutment of the Sakonnet River Bridge. The disk is about 1 foot above the level of the highway.
RM-2	20.77	A railroad spike set in a utility pole at the northwest corner of the property of 28 Cliff Avenue.

<u>DESIGNATION</u>	ELEVATION (FEET NGVD)	DESCRIPTION
RM-3	32.43	A chiseled square cut in the southwest corner of the southeast parapet wall of Cove Bridge.
498	8.88	An RIBPR disk, stamped "498", set on the top and 2.0 feet northeast of the southwest end of the southeast concrete base for the southeast concrete bannister of the abandoned Stone Bridge over the Sakonnet River. Disk is 166 feet east of the center line of Point Road.
BM 2	11.78	A Corps of Engineers mark established 5/94. It is a railroad spike set 0.6 feet up a utility pole at the intersection of Pine Street and Cottage Avenue. The unmarked pole is adjacent to #46 Cottage Avenue.
RM-7	21.85	A chiseled square cut in the northeast corner of the catch basin at the northwest corner of the intersection of Tallman Avenue and Aquidneck Avenue.
RM-8	64.26	A chiseled square cut in the northeast corner of the catch basin at the southeast corner of the intersection of Water Street and Power Street.
RM-9	39.82	A chiseled square cut in the southwest corner of a 9 foot x 16 foot concrete vault (#A-3). The vault is across from Weaver Cove and on the east side of Burma Road.

<u>DESIGNATION</u>	ELEVATION (FEET NGV)	
TIDAL 1	8.23	A standard USC&GS disk, stamped "NO 1 RESET 1965", set in the top and at the end of the concrete bulkhead at Alden Yachts. The mark can be reached by going to the old Melville Naval Base area and then to the end of Alden Landing Road. The mark is about 1 foot above the level of the parking area.
RM-5	17.10	A railroad spike set in utility pole #52 on the west side of Narragansett Avenue and approximately 600 feet north of Sophie Manor Lane.
RM-4	15.04	A chiseled square cut in the south end of a partially buried boulder approximately 65 feet north of the intersection of Narragansett Avenue and Alta Pier Street and approximately 35 feet east of Narragansett Avenue.
B 28	72.92	A standard USC&GS disk, stamped "B 28 1969", set vertically in the east face and at the southeast corner of the east one of the two first concrete piers north of the south concrete abutment of the Mount Hope Toll Bridge.

DESIGNATION	ELEVATION (FEET NGVD)	DESCRIPTION
H 27	9.30	A standard USC&GS disk, stamped "H 27 1969", set on the top and 3.2 feet west of the east end of a two foot high retaining wall at the old ferry landing on Mount Hope Bay. The disk can be reached by going 0.3 miles north along Bristol Ferry Road from the south end of the Mount Hope Toll Bridge to the ferry landing.

DESIGNATION	ELEVATION (FEET NGVD)	DESCRIPTION
RM-2	11.33	A railroad spike in utility pole #11 located on the northeast corner of the intersection of Ellery Road and Aborn Street.
BM-19	6.56	A chiseled square on the southwest corner of a catch basin on the north side of Memorial Boulevard; just south of the pump house and about 1000 feet east of the junction with Old Beach Road.
BM-51	24.24	A chiseled square on the northeast corner of the concrete base of a light pole on the east side of Ocean Avenue at the junction of Coggeshell Avenue.
BM-50	8.10	A chiseled square at the center of the granite front of a catch basin on the south side of Ocean Avenue; just west of the entrance to Bailey Beach Swim Club.
BM-57	23.19	A railroad spike in utility pole #NEC-8 set 0.95 feet above the ground at the northwest corner of Ruggles Avenue and Weatherly Avenue and across the road from the west side of McCormick Road.
BM-41	10.45	A chiseled square on the top of a concrete sea wall. Mark is located at a bend in the wall on the southeast side of Ocean Avenue and about 800 feet northeast of Harrison Avenue.

DESIGNATION	ELEVATION (FEET NGVD)	DESCRIPTION
BM-36	30.35	A chiseled square on the center of the top step of an old stone stairway on the east side of Ocean Avenue. The mark is about 250 feet south of the junction with Winans Avenue.
Z 28	52.08	A standard USC&GS disk, stamped "Z 28 1969", set on the top of a rock outcrop 26 feet south of the center line of Harrison Avenue and 3.5 feet above the level of the road. The mark can be reached by going 0.55 miles west along Harrison Avenue from the junction of Halidon Avenue.
Y 28	6.86	A standard USC&GS disk, stamped "Y 28 1969", set on top and at the northwest corner of a 13 foot by 8 foot concrete top of a water manhole. The mark is about 0.1 miles east of the junction with Halidon Avenue and 28 feet north of north curb of Wellington Avenue.
BM 3	6.20	A Corps of Engineers mark established 5/94. It is a chiseled square in a granite curb near the intersection of Marchant Street and Narragansett Avenue. The mark is near utility pole #5 at the corner of the intersection and across from house #39.

<u>DESIGNATION</u>	ELEVATION (FEET NGVD)	DESCRIPTION
X 28	6.87	A standard USC&GS disk, stamped "X 28 1969", set on top and 11.5 feet west of the east end of the concrete sea wall. The mark is in the southeast corner of Newport Harbor and about 243 feet north of the center line of Wellington Avenue.
W 28	17.56	A standard USC&GS disk, stamped "W 28 1969", set vertically in the north sandstone wall near the northwest corner of the main post office building. The mark is 82 feet south of the center of Franklin Street and 30.5 feet east of the east curb on Thames Street.
1 (USE)	15.76	The mark is the top of the stone foundation at the southwest corner of the 3 story brick building at the corner of Thames and Green Streets. The mark is 10 feet east of the east curb of Thames Street, 4.5 feet north of the north curb of Green Street, and 1.3 feet above the level of the sidewalk.
BM 4	6.54	A Corps of Engineers mark established 5/94. It is a chiseled square in a granite curb at the intersection of Farwell street and the rotary leading to Goat Island. The mark is adjacent to utility pole #6 on the southwest edge of the gravel lot for the Newport Old Coloney Railroad.

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DESIGNATION	ELEVATION (FEET NGVD)	DESCRIPTION
BM 5	10.49	A Corps of Engineers mark established 5/94. It is a chiseled square set in the top of a concrete sea wall behind the Newport Islander Doubletree Hotel on Goat Island. The four foot high sea wall is adjacent to a paved road that runs behind the hotel.
TIDAL 6	6.16	A standard USC&GS disk, stamped "6 1943", set in the top and 1.3 feet southwest of the northeast end of a concrete slab, 53 feet southwest of the center line of Luce Avenue, and about level with the sidewalk.
TIDAL 1	34.30	A standard USD&GS disk, stamped "NO 1 1931", set vertically in the granite face on the east side of the War College Building near the northeast corner of the south wing. The mark is located 0.2 miles northwest along Luce Avenue from the main gate to Coasters Harbor Island and is at ground level.
P 28	6.74	A standard USC&GS disk, stamped "P 28 1969", set on the top and 3 feet south of the north end of the east lower abutment of the bridge over Coasters Harbor. The mark is located about 20 feet north of the center line of Ninth Street and 2 feet below the level of the road.

DESIGNATION	ELEVATION (FEET NGVD)	DESCRIPTION
RM-2	21.11	An RIBPR disk, set flush with the sidewalk on the west side of Elmwood Avenue bridge over the Pawtuxet River, approximately 1 foot northwest of a cement post light pole.
RM-6	52.92	A standard USC&GS disk, stamped "B 2 1923", set on top of the southeast end of the northeast concrete abutment of a railroad overpass over Lincoln Avenue. The mark is about 10 feet above the level of the road.
407	32.26	An RIBPR disk set in the top of a concrete post in the driveway of #567 West Shore Road. The mark is in the Conimicut section of Warwick at the intersection of West Shore Road and Cambridge Avenue.
M 24	24.36	A standard USC&GS disk, stamped "M 24 1969", set vertically in the southeast brick wall at the east corner of the two-storied brick building behind the Warwick Community Health Center. The mark is located on Steele Avenue about 3 feet above the level of the ground.

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<u>DESIGNATION</u>	ELEVATION (FEET NGVD)	DESCRIPTION
L 24	6.90	A standard USC&GS disk, stamped "L 24 1969", set on the top of the southwest end of the northwest concrete head wall of an 8 foot concrete culvert with wing walls over Lockwood Brook. The mark is located 0.1 miles northeast of Church Avenue and is 1 foot below the level of West Shore Road.
BM 6	10.58	A Corps of Engineers mark established 5/94. It is a chiseled square in a granite curb on Oakland Beach Avenue. The mark is near the intersection of Mohawk Avenue and is in front of Joe's Barber Shop.
BM 7	5.73	A Corps of Engineers mark established 5/94. It is a chiseled "X" in the rim of a water valve cover near the intersection of Spadina Avenue and Point Avenue. The mark is on Spadina Avenue across from utility pole #21.
411	25.53	An RIBPR disk set in the top of a concrete post at the junction of West Shore Road and Oakland Beach Avenue. The mark is located in the northeast corner of the intersection 1 foot above the level of the road and 11 feet south-southeast of a metal flagpole.

DESIGNATION	ELEVATION (FEET NGVD)	DESCRIPTION
BERRY RM 1	32.32	A standard USC&GS disk, stamped, "BERRY NO 1 1968", set on top of the northwest concrete curb of the driveway leading northeast to the Warwick Veterans Memorial High School. The mark is 95 feet southwest of and across from a circular drive that has a flagpole.
K 24	42.99	A standard USC&GS disk, stamped "K 24 1969", set in the top of the southeast concrete foundation which projects out 1.4 feet southeast from the southeast wall of the church. The mark is 32 feet northeast of the south corner of the church and 1.2 feet below the top of the wall.
RM-10	23.89	A standard USC&GS disk, stamped "J 2 1923", set on top of the south concrete abutment of a railroad overpass over West Shore Road (Rte 117). The mark is about 3 feet below the level of the tracks.
RM-11	19.92	An RIBPR disk set in the southwest corner of the intersection of Greenwich Avenue and Centerville Road. The mark is near the northeast corner of the service station and level with the sidewalk.

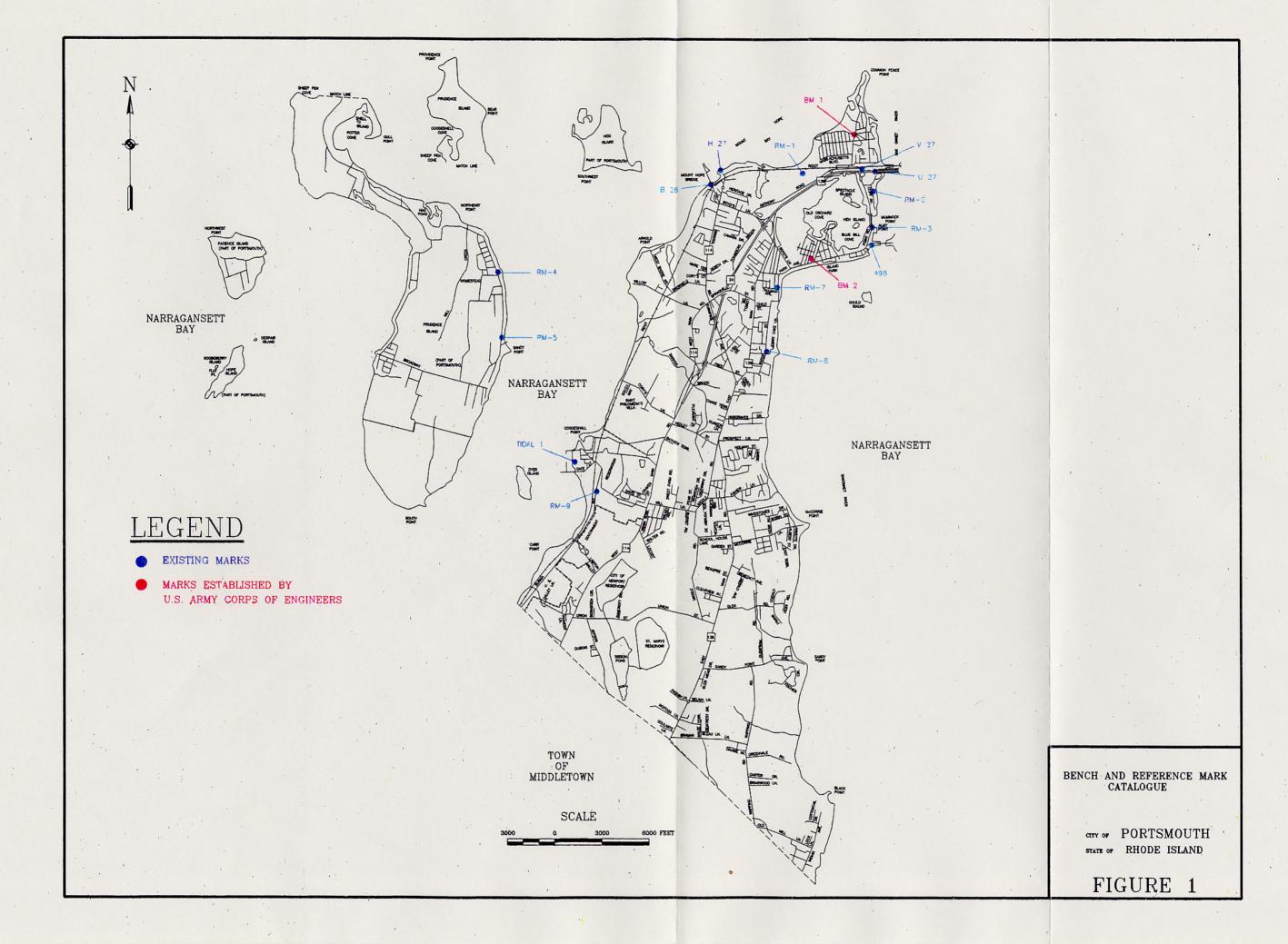
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C 17	19.25	A standard USC&GS disk, stamped "C 17 1965", set on top of the south end of the west concrete head wall of an abandoned concrete culvert. The mark is 77 feet north of the center line of Ashmont Street and 14.5 feet west of the Post Road (Rte 1) curb.
A 9	33.46	A standard USC&GS disk set on top of the southeast end of the northeast abutment of the railroad overpass over Forges Road. The mark is 6.8 feet southeast of the railroad tracks and 2 feet below the level of the tracks.
BM 8	7.89	A Corps of Engineers mark established 6/94. It is a chiseled square in a granite curb located on the rotary at the end of Ives Road. The rotary is near the intersection of Ives Road and Bradford Avenue in the Potowomut area of Warwick.

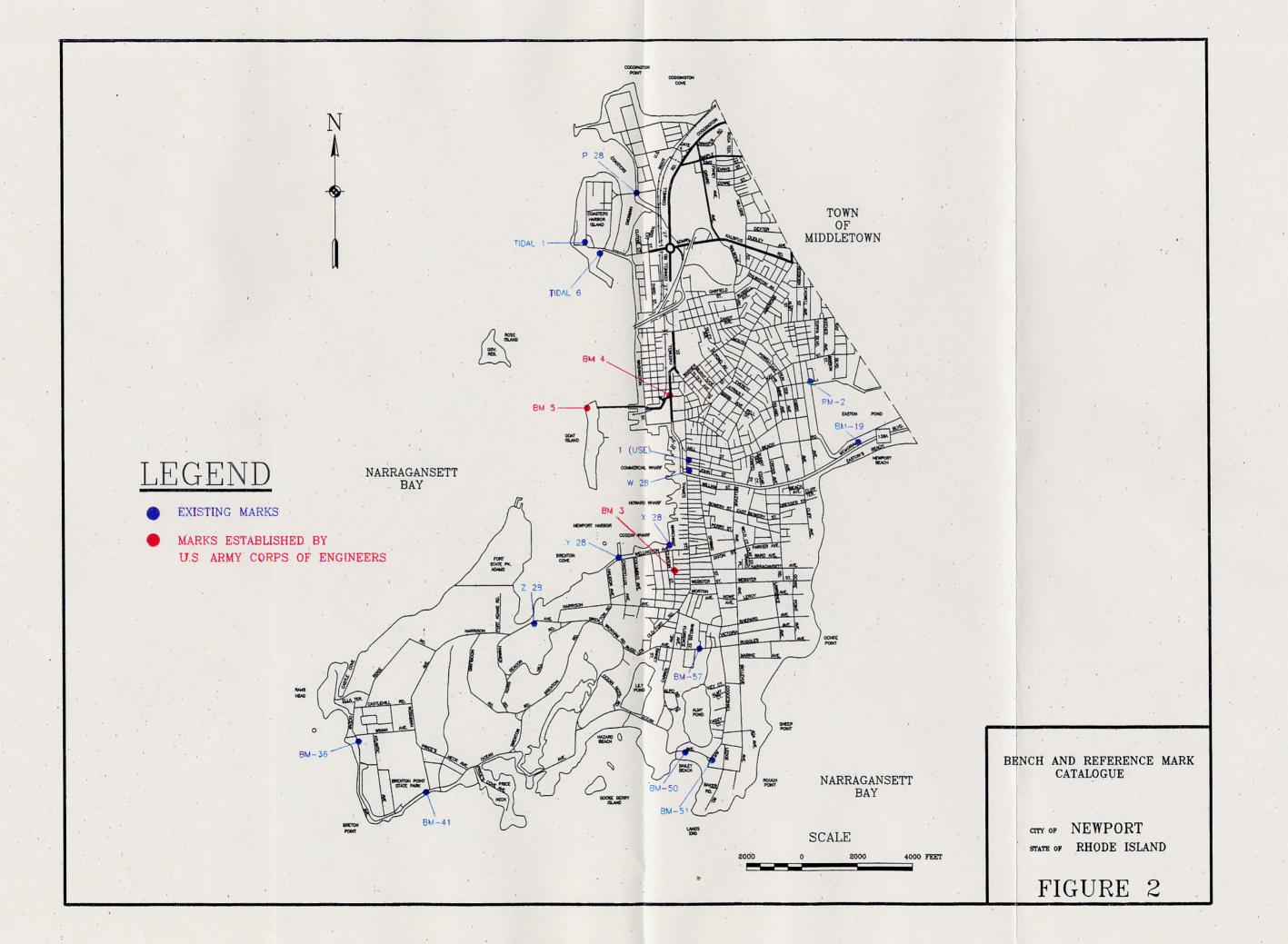
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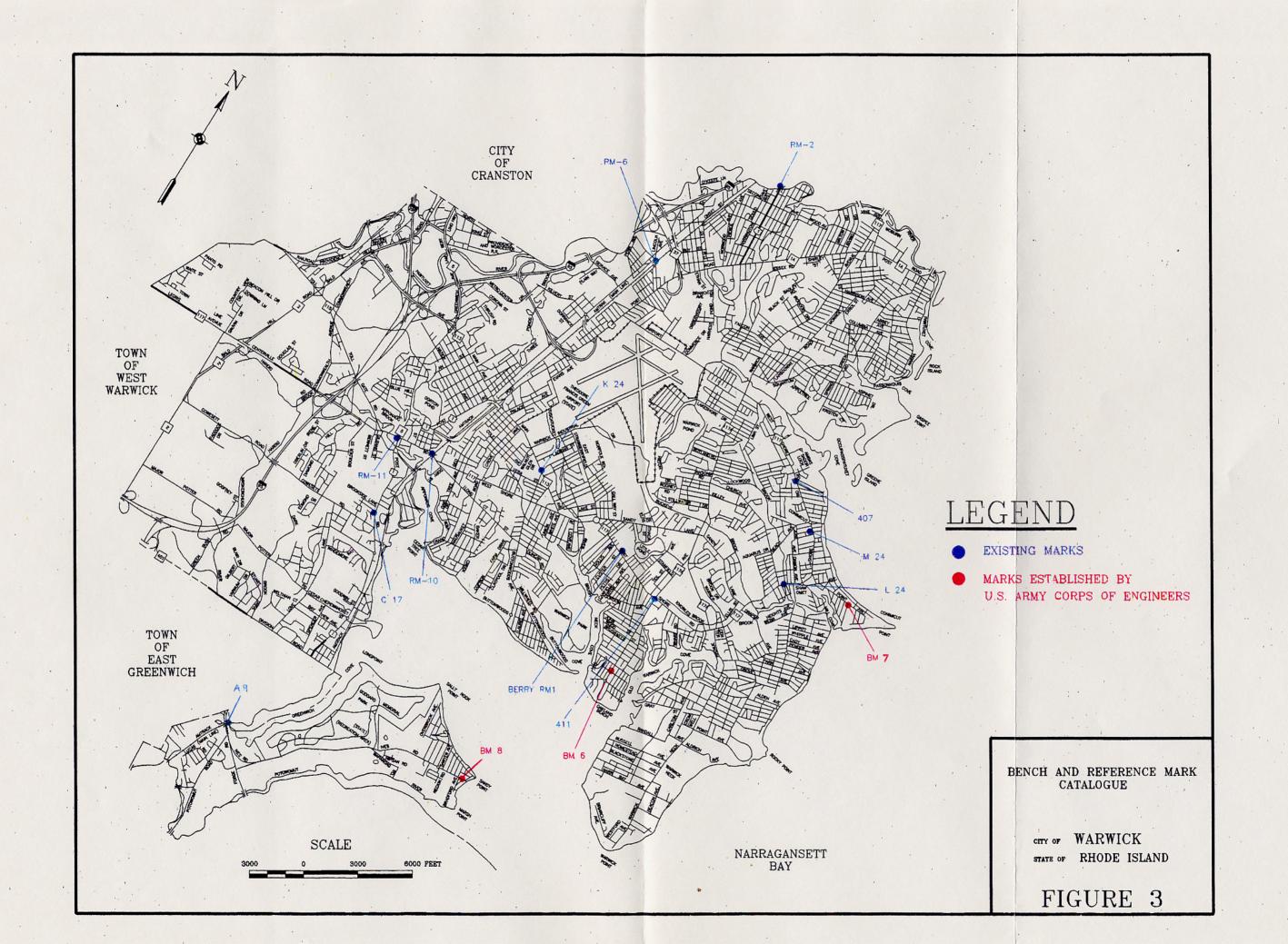
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For use of this form, see TM 5-237; the proponent
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APPENDIX BENCH AND REFERENCE MARK INSTALLATION FIELD NOTES

PROJECT	TYPE OF MARK	STATION			
FPMS	X-Cut in W.G. Rim	BM	1		I
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New England Division

DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
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PROJECT	TYPE OF MARK		STATION	· · · · · · · · · · · · · · · · · · ·			
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REMARKS:							
BM2 is a railroad q	the set 0.6' up a	a numberles	s utility	pole at the	is tersec	tion o	, <u>f</u>
Pin Street	1 Cottage Averve.		0				
FIRE STREET and	s contage morroe.	······································					
							
RM 2 is a railroad sp	ike set 1-2' up	utility	pole #4				
	7						
RM 2A is the northwe	est comer of	a concret	e store	n front of how	e #4		
THE WAY IS THE HOLLING	OF CUINE	w concret	- 0,7000 /	n Trunt of Mac		· /	



DESCRIPTION OF RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent
agency is TRADOC.

REFERENCES: FIELD BOOK NO.

	TYPE OF MARK		107 1 7 1 5 1				
PROJECT	.		STATION	,			1
FPMS	Chiseled square	<u>e</u>	BM 3				
LOCALITY	STAMPING ON MARK			ST IN MARKS)	ELEVA		Ð
Newport, RI			USACE	<u> </u>	6.	20	(M)
LATITUDE	LONGITUDE		DATUM		DATU		
	-]) <i>~</i>	6 V D	j
(NORTHING. (FT)	(EASTING)[GRID AND Z	ONE			IAGENCY
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(NORTHING)(EASTING)	15 15 10 10 10 10 10 10 10 10 10 10 10 10 10		·	oue.	DATE		
(FT)	(EASTING)(NORTHING	, (FT)	GRID AND Z	ONE	5/26	lou	ORDER
(M)	<u> </u>	(M)	<u> </u>		7-0	/77	j
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TO OBTAIN	G	RID AZ. (AD	0)(\$U\$.)	, , , , , , , , , , , , , , , , , , ,	TOT	HE GEODE	HTUMISA DIT
	ZIMUTH OR DIRECTION			GEOD. DISTA	NCF	GRID	DISTANCE
OBJECT	(GEODETIC)(GRID)	BACK A	ZIMUTH	1	FEETI	IMETERS	
	(MAGNETIC)	ó	,,				
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	RM3A →O	3	4.581	1 2.42'		U ny	1 10011
	\\ !			RM3			
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	Manhole	curb			ł		
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REMARKS:		<u> </u>		11 11	1		
Bm 3 is a chisele	A CHARLE AL .	aran La	urh .	elev. 6.20°			
Diri O IS O Chisele	Sparce on a	J. WILL C	-vi a , C	ciev. 6.acc			
		<u>. </u>					
RM 3 is an x-cu	t in the sim of	a mand	Ja 21	eJ. 6.33 '			
Bri S is an X-LV	IN THE TIME OF	a Fireing	"- , e "	ev. 6.55			
							
RM 3A is a railroa	d spike set in	1.6' ahr.	المريومية ع	as utility and	o #	ليماص	8.08
	ту за за ср		- 9 -0/10	- Julia Pon		, ciev	



DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM \$-237; the proponent
agency is TRADOC.

REFE	RENCE	s:	
FIFI D	BOOK	NO	

PROJECT FORMS Checked Square Chical Square Chic	200	TYPE OF MARK		STATION		·····		
LOCALITY MEMORY P. T. STAMPING ON MARK CONTROL OF THE CONSTRUCT LATITUDE LONGITUDE L	FOM C		e		4			1
REMARKS: CATUME CAST CA	LOCALITY				·	ELEV	TION	
LATITUDE LONGTUDE LONGTU	Nowport, RI			I .		6	.54	
INDRITHING. (FT) TEASTINGTH (FT) GRID AND TONE INDRITHINGTEASTINGTH (FT) TEASTINGTHORY HINDS (FT) GRID AND ZONE TO OBTAIN GRID AZIMUTH, ADD TO THE SEDECTIC AZIMUTH OBJECT AZIMUTH OR DIRECTION (ICCODETICINGRIC) (IMAGRETIC) AZIMUTH (IMAGRETIC) AZIMUTH (IMAGRETIC) AZIMUTH (IMAGRETIC) (IMAGRETIC) AZIMUTH (IMAGRETIC) (IMAGRETIC) (IMAGRETIC) AZIMUTH (IMAGRETIC) (IMAGRETIC	LATITUDE	LONGITUDE				DATU		``
TO OBTAIN OBJECT ALMUTH OR DIRECTION OBJECT CAND ACK AZIMUTH CAND AZIMUTH OR DIRECTION (ACK AZIMUTH CAND AZIMUTH OR DIRECTION (ACK AZIMUTH CAND CALIBUTH]		<i>N</i>	6 V D	•
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TO OBTAIN TO OBTAIN TO OBTAIN OBJECT AZIMUTH OR DIRECTION OBJECT AZIMUTH OR DIRECTION BACK AZIMUTH GEOD. DISTANCE (METERS) FEET) SKETCH: NOT TO SCALE RM4A RM4 RM4 RM4 RM4 RM4 RM4 RM								- 1
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CORDITION OBJECT AZIMUTH OR DIRECTION IOGOOPTICION(DI) MAGNETIC FIN Street Elm Street Regional Region of the second of the rotang to Good Distance (Alous Distance (METERS)) (FEET) Remarks: BM4 is an chiefed good of the rotang to Good Distance (Alous Distance (METERS)) (FEET) Control of Colong (METERS) (FEET) Remarks: BM4 is an chiefed good of the rotang to Good Island, clev, 6.54	(1	4)	(M)	<u> </u>		1/26	/94	
DBJECT AZIMUTH OR DIRECTION INCOMPICIONARY INCOMPICIONARY INAGENTIC) BACK AZIMUTH GEOD DISTANCE (INETERS) FETT SKETCH: NOT TO SCALE Newport Old Citing Railroad Remain of building Remains Remain Remains Remain							·	
Elm Street Elm Street SKETCH: NOT TO SCALE Religion of Street Rend	TO OBTAIN		RID AZ. (AD	D)(SUB.)	<u> </u>	70 7	HE GEODETIC A	ZIMUTH
Elm Street SKETCH: NOT TO SCALE Hewport Old Cilony Reignand Forwell Street Cemer of britain 100 116.25' RM4A	73380		BACK A	ZIMUTH				
REMARKS: BM 4 is a chastled synure in a grante curb at the retary to Gint Island, cley, 6.54' SKETCH: NOT TO SCALE SKETCH: NOT TO SCALE RM4A RM4A		(MAGNETIC)			(ME)ENSI		THETENSI	7 2 2 1 1
Newport Old Citary Railroad Remarks: Remarks: By your in a grank curb at the rotory to Goat Island, play, 6.54'				•	<u> </u>		<u> </u>	
Newport Old Citary Railroad Remarks: Remarks: By your in a grank curb at the rotory to Goat Island, play, 6.54'			ļ		1.			
Newport Old Citary Railroad Remarks: Remarks: By your in a grank curb at the rotory to Goat Island, play, 6.54'					 			
Newport Old Citary Railroad Remarks: Remarks: By your in a grank curb at the rotory to Goat Island, play, 6.54'								
Newport Old Citary Railroad Remarks: Remarks: By your in a grank curb at the rotory to Goat Island, play, 6.54'	El., Cl., L	+ +	<u> </u>				··	
Remarks: BM4 is a chiscled source in a grande curb at the ratury to Goat Island, clev. 6.54	EIM Street	+ +			SKET	rch: N	OT TO SCAL	.E
41 100 01 10 12 10 000 1 010 tology 1 010 tology 1 010 tology 1 010 tology	REMARKS: BM4 is a chiscled specific and specific specifi	be gravel for parking lot 116.25' Goat Island Rotary eve in a gravile cur ke set 1.3' up Fran in g Newpoort Old Colon	BM 4 16.65' BM 4 The ground by Railroad	rotary for in utility elev.	pole #6 on t	he son	hwest edje o	f the
	of Farewell Street	and the rotary	at the h	us ferminal	elev. L.	43 '		
RM4A is an x-cut in an s.w. stud that holds the aluminum light post at the intersection of Farewell Street and the rotary at the bus terminal. elev. 6.43'						1.7		, , . , , , . , , , , , , , , , , , , ,
of Farewell Street and the rotary at the bus terminal, elev. 6.43'								



DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
For use of this form, see TM 5-237; the proponent
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REFERENCES: FIELD BOOK NO.

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PROJECT	TYPE OF MARK		STATION	-			
FPMS	Chiseled squar	ve.	BM 5				
LOCALITY	STAMPING ON MARK		AGENCY ICA	ST IN MARKSI	ELEVA		<i>~</i>
New port, RI			USACE	•	10.	49	⊕
LATITUDE	LONGITUDE	<u> </u>	DATUM	<u>-,</u>	DATU		141
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REMARKS:							
REMARKS:							
	quare is a concrete	sea will	behind the	Newport Is	lander	Do Wble tree	· Hat!
BM5 is a chiseled s			behind the	· Newport Is	lander	Do Wale tree	- Hotel
BM5 is a chiseled s	quare in a concrete ; elev. 10.49		behind the	Newport Is.	lander	Do Wále trec	· Hotel
BM5 is a chiseled s			behind the	: Nowport Is	lander	Do Wale tree	. Hotel
BM5 is a chiseled s on Goat Island	, eleu. 10.49	<u> </u>				Do Wile tree	· Hotel
BM5 is a chiseled s	, eleu. 10.49	<u> </u>		: Newport Is.		Do w ble tree	· Hatel
BM5 is a chiseled s on Goat Island	, eleu. 10.49	<u> </u>				Do Wble tree	Hek!

H.H.

US Army Corps of Engineers New England Division DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
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REFERENCE!	5:
FIELD BOOK	NO.

	TYPE OF MARK						
PROJECT			STATION				ł
FPINS	Chiseled Squar	E	BM 6				- 1
LOCALITY	STAMPING ON MARK		AGENCY ICA	ST IN MARKS	ELEVA	CF T	\Box
Warwick, RI			USACE	•	10).58 (M)	1
LATITUDE	LONGITUDE		DATUM		DATUN		\dashv
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TO OBTAIN	G	RID AZ. (AD	DI(SUB.)		TOT	HE GEODETIC AZIMU	TH
	AZIMUTH OR DIRECTION			GEOC. DISTA	NCE	GRID DISTANCE	
OBJECT	(GEODETIC)(GRID)	BACKA	ZIMUTH		FEETE	(METERS) (FEE	
	(MAGNETIC)	• ,	, , , , , ,				
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REMARKS:							
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DITI 6 is a Chiseled S	square in a granite co	urb 14 trans	r or Joe's	wasa shoo	elev	, 10.58	
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0.40 / 11	1 221					12.2.1	
RM6 is a railroad	spike in utility,	pole 777	, 1.1 ab.	we the ground,	elev	, 12.31	
RM 6A is a railroad	makes is with the	#70	1 1 1	4	· lavi	11.62'	_
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DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
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egency is TRADOC.

REFER	ENCE	3:	
FIELD	BOOK	NO.	

	TYPE OF MARY		STATION						
PROJECT FPMS							1		
		X-cut in Watergate rim		BM 7			ELEVATION		
Warwick, RI	STAMPING ON MARK	STAMPING ON MARK		USACE		73	(E)		
LATITUDE	LONGITUDE		DATUM		DATUA	610			
	15.57	··-··	1						
(HORTHING, (F	(EASTING)	(EASTING)((FT)		GRID AND ZONE		USACE BY LAGENCYS			
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TO OBTAIN	AZIMUTH OR DIRECTION	GRID AZ. IAD	OI(SUB.)	-	70 1	HE GEODET	HTUMITA SI		
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REMARKS:						O Top Ce	uter NuT		
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BM 7 is an X-cut	in a watergate run	on sprain	Avenue,	elev. 5.13					
0 1 1		4					<u></u>		
RM7 is a pailroad	Spike , 1.3 above	The Stovad in	pole "2	o , elev.	7.13				
240 400		,, 1 .	1 #						
RM 7A is a railread	spike 1.0' above 1	the ground in	pole +21	, elev. 7.	37				



DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION For use of this form, see TM 5-237; the proponent agency is TRADOC.

REFERENCES:

FIELD BOOK NO.

	TYPE OF MARK		STATION					
PROJECT			BM	ଟ			1	
FPMS	Chiseled Squa	<i>/</i> e	1					
LOCALITY	STAMPING ON MARK			ST IN MARKSI	ELEVA		©	
Warwick, RI	•		USACE		I	89	(M)	
LATITUDE	LONGITUDE		DATUM		MUTAG			
						VD	. 1	
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(M)		(M)	<u> </u>		TO THE GEODETIC AZIMUTH			
TO OBTAIN		RID AZIMUT		, , , , , , , , , , , , , , , , , , , 				
TO OBTAIN	G ZIMUTH OR DIRECTION	RID AZ, (AD	DI(SUB.)		TO T:	HE GEODE	TIC AZIMUTH	
OBJECT	(GEODETIC)(GRID) (MAGNETIC)	BACK A		GEOD. DISTANCE GRID DISTANC (METERS) (FEET) (METERS) (FE				
	• • •	٠,	• •					
Ives Road granite curb catch ba	W so	ARY od ps		11.58	rb face	gr	nite curb	
REMARKS: BM 8 is a chiseled s RM 8 is a railroad spik RM 8 is a railroad spik		sidewall sid	of a granit	Rm 8A Le cumb at the #59 , elev.	end of	8'		

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US Army Corps of Engineers New England Division DESCRIPTION OR RECOVERY OF HORIZONTAL CONTROL STATION
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REFERENCES: FIELD BOOK NO.